Claims

1. A method of producing low-temperature coke, in which granular coal is heated to a temperature of 700 to 1050°C in a fluidized-bed reactor (2) by means of an oxygen-containing gas, **characterized in that** a first gas or gas mixture is introduced from below through at least one gas supply tube (3) into a mixing chamber region (8) of the reactor (2), the gas supply tube (3) being at least partly surrounded by a stationary annular fluidized bed (6) which is fluidized by supplying fluidizing gas, and that the gas velocities of the first gas or gas mixture and of the fluidizing gas for the annular fluidized bed (6) are adjusted such that the Particle-Froude-Numbers in the gas supply tube (3) are between 1 and 100, in the annular fluidized bed (6) between 0.02 and 2 and in the mixing chamber (8) between 0.3 and 30.

2. The method as claimed in claim 1, **characterized in that** the Particle-Froude-Number in the gas supply tube (3) is between 1.15 and 20.

3. The method as claimed in claim 1 or 2, **characterized in that** the Particle-Froude-Number in the annular fluidized bed (6) is between 0.115 and 1.15.

4. The method as claimed in any of the preceding claims, **characterized in that** the Particle-Froude-Number in the mixing chamber (8) is between 0.37 and 3.7.

5. The method as claimed in any of the preceding claims, **characterized in that** part of the solids discharged from the reactor (2) and separated in a separator (10) are recirculated to the annular fluidized bed (6).

6. The method as claimed in claim 5, **characterized in that** the amount of the product stream recirculated to the annular fluidized bed (6) is controlled in dependence on the pressure difference above the mixing chamber (8).

7. The method as claimed in any of the preceding claims, **characterized in that** coal with a grain size of less than 10 mm is supplied to the reactor (2) as starting material.

8. The method as claimed in any of the preceding claims, **characterized in that** highly volatile coal is supplied to the reactor (2) as starting material.

9. The method as claimed in any of the preceding claims, **characterized in that** air is supplied to the reactor (2) as fluidizing gas.

10. The method as claimed in any of the preceding claims, **characterized in that** the pressure in the reactor (2) is between 0.8 and 10 bar.

11. The method as claimed in any of the preceding claims, **characterized in that** iron ore is additionally supplied to the reactor (2).

12. The method as claimed in claim 11, **characterized in that** the iron ore is preheated before being supplied to the reactor (2).

13. The method as claimed in any of claims 10 to 12, **characterized in that** from the reactor (2) a product of iron ore and low-temperature coke is withdrawn, which has a weight ratio of iron to carbon of 1:1 to 2:1.

14. A plant for producing low-temperature coke, in particular for performing a method as claimed in any of claims 1 to 13, comprising a reactor (2) which constitutes a fluidized-bed reactor, **characterized in that** the reactor (2) has a gas

supply system which is formed such that gas flowing through the gas supply system entrains solids from a stationary annular fluidized bed (6), which at least partly surrounds the gas supply system, into the mixing chamber (8).

15. The plant as claimed in claim 14, **characterized in that** the gas supply system has at least one gas supply tube (3) which in the lower region of the reactor (2) extends upwards substantially vertically into the mixing chamber (8) of the reactor (2), the gas supply tube (3) being surrounded by a chamber which at least partly annularly extends around the gas supply tube (3) and in which the stationary annular fluidized bed (6) is formed.

16. The plant as claimed in claim 15, **characterized in that** the gas supply tube (3) is arranged approximately centrally based on the cross-sectional area of the reactor (2).

17. The plant as claimed in any of claims 14 to 16, **characterized in that** downstream of the reactor (2) there is provided a separator (10) for separating solids, which preferably has a solids return conduit (11a) leading to the annular fluidized bed (6) of the reactor (2).

18. The plant as claimed in any of claims 14 to 17, **characterized in that** in the annular chamber (4) of the reactor (2) a gas distributor (5) is provided, which divides the chamber (4) into an upper fluidized bed region (6) and a lower gas distributor chamber, and that the gas distributor chamber is connected with a supply conduit (7) for fluidizing gas.

19. The plant as claimed in any of claims 14 to 18, **characterized in that** upstream of the reactor (2) a preheating stage is provided, which consists of a heat exchanger (20) and a separator (14).